REMARKS

Rejection of claims 9, 23 and 39 under 35 USC § 112

Claims 9, 23 and 39 were objected to under 35 U.S.C. § 112 on the basis that the limitation "optionally" makes the claim indefinite because it is not clear if the limitation which follows is to be considered in determining patentability. All of these claims have been amended, deleting the phrase "said waveguide optionally having stepped interior surfaces." New claims 44-46 have been added which are respectively dependent on amended claims 9, 23 and 39, the new claims requiring that "said rectangular waveguide has stepped interior surfaces at the small end of said pyramidal horn."

Rejection of claims 1-13, 15-27 and 29-43 under 35 USC § 103

Claims 1-13, 15-27 and 29-43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Antenna Engineering Handbook (AEH) by Richard Johnson in view of Wilson U.S. Patent No. 4,658,258. Claims 1, 15, 29 and 43 are the only independent claims in this group of claims and have been amended.

The Examiner has correctly observed that the AEH, while disclosing flare pyramidal horn elements with corrugated interior surfaces, does not disclose the use of the recited equation relating wavelength, aperture width and half angle. The Examiner alleged that "it would be an obvious modification of the analysis disclosed in Wilson to be performed on a corrugated horn based on this disclosure since both devices are in the horn art." However, the analysis performed by Wilson, cols. 3-4, is substantially different from the Applicant's design methodology of integrating the spherical-wave error in the *E* and *H* planes of a pyramidal horn without approximation to provide sharp sector coverage through the flare angle of the horn walls as required by amended claims 1, 15, 29 and 43:

> "being dimensioned to produce a ratio Δ_e/λ greater than 1.5, where $\Delta_e = [a/2/\lambda] \tan(\alpha_e/2)$ is the spherical-wave error of said horn, λ is the free space wavelength of the microwave signals to be transmitted by said antenna, a is the aperture width and α_e is the horizontal half-angle of the horn."

Furthermore, Wilson's own analysis is directed toward an equality of beamwidths, col. 4, lines 48-49: "When H_N is ¼ λ_0 the E and H plane beamwidths are equal or nearly equal." This is

because the disclosure of Wilson is directed toward a feed horn, col. 3, line 65: "is used to illuminate a symmetrical paraboloid." The AEH and Wilson, do not bring any new material or suggestions to this discussion over the references cited in the Applicant's Information Disclosure Statement, none of which discloses the Applicant's method of integration in the design of a pyramidal microwave horn, as discussed above.

Claims 2-13 and 44, 16-27 and 45, 30-42 and 46 are directly or indirectly dependent on claims 1, 15, 29 respectively. All of these claims are allowable for at least the same reasons set forth above with respect to the independent claims.

The Examiner has acknowledged that claims 14 and 28 are directed to allowable subject matter. Claims 1-46 remain in this application. Claims 44-46 have been added.

Reconsideration of this application in light of the foregoing amendments and remarks is respectfully requested.

A check is enclosed for $54.00 to cover the fee for additional claims. The Commissioner is authorized to deduct any additional fees required (except for payment of the issue fee) from or to credit any overpayment to Jenkens & Gilchrist, P.C. Deposit Account No. 10-0447, Order No. 47176-00727USPT.

Respectfully submitted,

By _____

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